ISMAIL-ZADE, D.I.

Some properties of the sand-phenol-formalin mixture.
Izv. AN Azerb. SSR Ser.geol.-geog.nauk nefti no.1:89-91 '62.
(MIRA 15:5)

(Oil sands)

ISMAILZADE, D.I.

Results of using the sand-phenol-formaldehyde mixture for processing well-bottom zones. Azerb. neft. khoz. 42 no.1: 28-29 Ja '63. (MIRA 16:10)

(Azerbaijan—Oil wells)

ISMAILZADE, I. G.

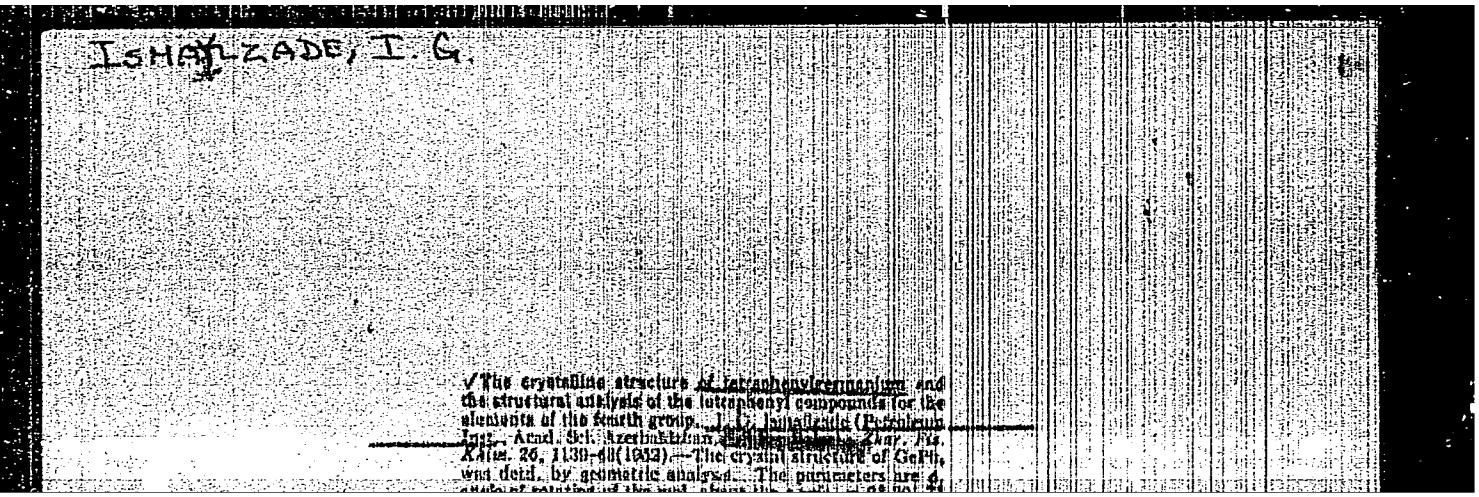
USSR/Chemistry - Aryl Compounds X-Ray, Analysis Sep 49

"Roentgenographic Studies of the Structure of Several Tetra-Aryl Compounds of Silicon, Tin, and Lead," G. S. Zhdanov, I. G. Ismailzade, Sci Res Physicochem Inst imeni L. Ya. Karpov, 4 pp

"Dok Ak Nauk SSSR" Vol LXVIII, No 1

Determines syngony, Laue class, elementary lattice, and spatial group for the compounds: $Sn(C_6H_5)_4$, $Sn(C_6H_4OCH_3)_4$, $Sn(C_6H_5OCH_3)_4$, $Sn(C_6H_4OC_2H_5)_4$, $Si(C_6H_5)_4$, and $PO(C_6H_5)_4$. All compounds studied were synthesized and were by senior scientific collaborators Synthesrstand Struebure of Metal-Org Compounds-directed by Prof K. A. Kocheshkov. Submitted by Acad D. S. SBemyankinb 6 Jul 49.

PA 2/50T34



ISHAKZADE, I. G.

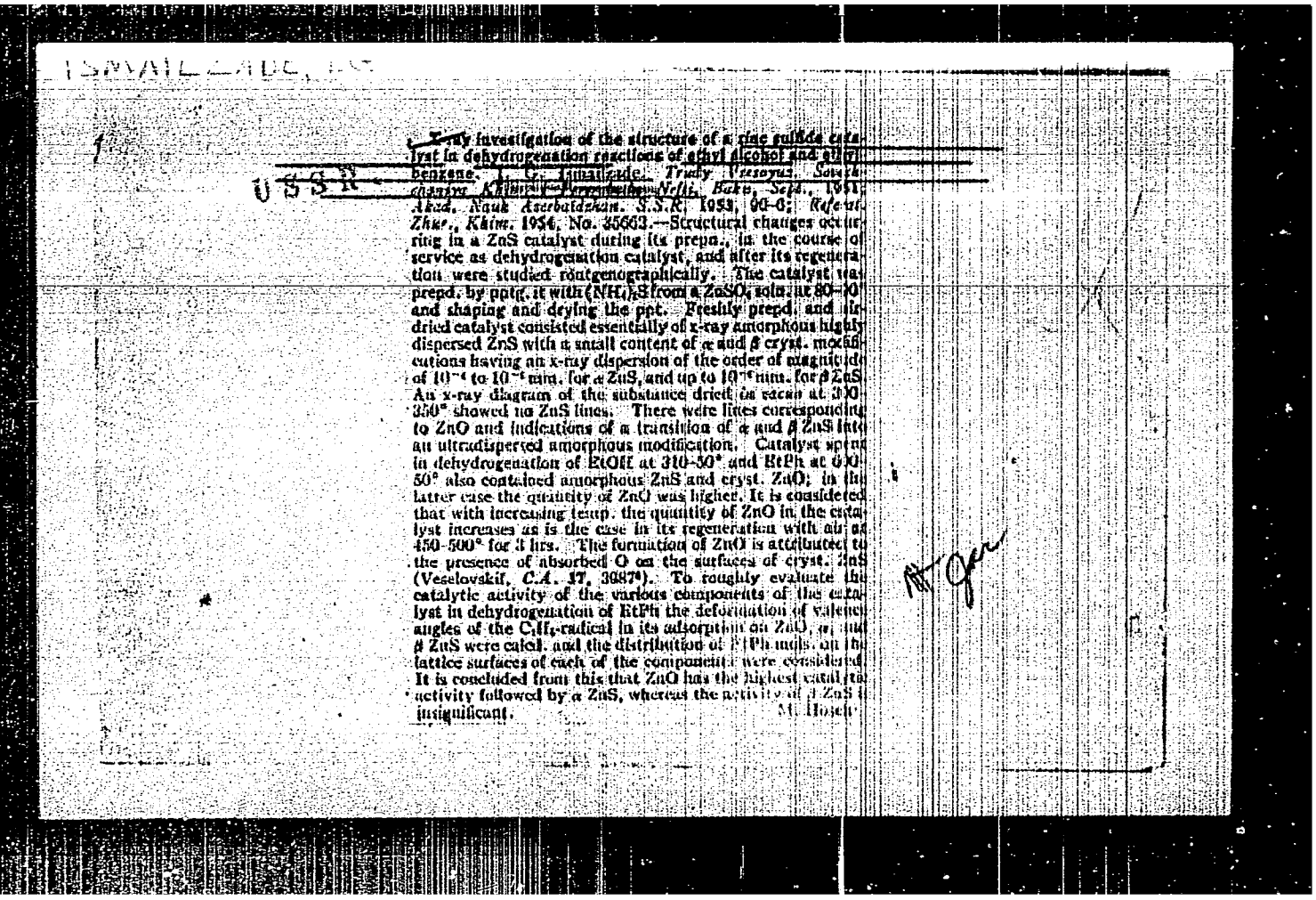
✓The crystalline structure of tetraphenylgermanium and the structural analysis of the tetraphenyl compounds for the elements of the fourth group. I. I. Ismailzade (Petroleum Inst., Acad. Sci. Azerbaidzhan). Zhur. Fiz. Khim. 26, 1139-48(1952).—The crystal structure of $GePh_4$ was detd. by geometric analysis. The parameters are a

[illegible] Kristall. 26, 130-41(1952).—The crystal structure of $GePh_4$ was detd. by geometric analysis. The parameters are φ, angle of rotation of the mol. about the z-axis, = 6° 30'-7° and ψ, angle of rotation of the phenyl groups about the Ge—C bond, = 55° 30'. A complete analysis was made for all 5 of the tetraphenyl crystals of C, Si, Ge, Sn, and Pb. It is proposed that the valence angles C—C—C are deformed by 3° 30' in the crystal Ph_4C. I. Rovtar Leach

ISMAILZADE, I. G.

4

Crystal structure of metalloörganic compounds. II. X-ray investigation of the crystal structure of the tetraphenyl compounds of silicon, tin, and lead. I. G. Ismailzade and G. S. Zhdanov (L. Ya. Karpov Phys.-Chem. Inst., Moscow). *Zhur. Fiz. Khim.* 26, 1619-30(1952); cf. *C.A.* 47, 4112b; George, *C.A.* 21, 678; Giacomello, *C.A.* 32, 9016[a].—The crystal structures of $SiPh_4$ (I), $SnPh_4$ (II), and $PbPh_4$ (III) were detd. from 140 reflection intensities, by geometrical analysis, and by 2-dimensional projections of electron d. The angles of inclination of the mols. relative to the tetragonal axis for I, II, and III are 3 ± 1, 7 ± 1, and $5.5 \pm 1°$, resp., whereas the angles of inclination of the phenyl ring to the M—C bond (where M is Si, Sn, or Pb) for I, II, and III are -37 ± 2, -42 ± 2, and $-50 \pm 3°$, resp. In adjacent mols. (A) and (B) the interat. distances C_{4A}-C_{3B}, C_{4A}-C_{4B}, H_{4A}-H_{4B}, and H_{4A}-C_{4B} in that order are in I, 3.67, 3.06, 3.01, and 3.16; in II, 3.54, 3.50, 2.50, and 2.98; in III, 3.40, 2.90, 3.33, and 3.37 A. The van der Waals radius of the H atom is 1.2 A. Results and working data are tabulated and graphed. A projection of a unit cell of I is shown. The interplanar distance between phenyl groups is greater than normal for aromatic compds. because of repulsion between H atoms. T. W. Leachery, Jr.



USSR

X-ray investigation of the structure of a zinc sulfide catalyst in dehydrogenation reactions of ethyl alcohol and ethylbenzene. A. G. Ismailzade. *Trudy Vsesoyuz. Soveshch. Katalizu, Tezisy Dokladov, Nefti, Baku, Sept., 1951. Akad. Nauk Azerbaidzhan. S.S.R.* 1953, 96-6; *Referat. Zhur., Khim.* 1954, No. 35663.—Structural changes occurring in a ZnS catalyst during its prepn., in the course of service as dehydrogenation catalyst, and after its regeneration were studied röntgenographically. The catalyst was prepd. by pptg. it with $(NH_4)_2S$ from a $ZnSO_4$ soln. at 80–90° and shaping and drying the ppt. Freshly prepd. and air-dried catalyst consisted essentially of x-ray amorphous highly dispersed ZnS with a small content of α and β cryst. modifications having an x-ray dispersion of the order of magnitude of 10^{-4} to 10^{-5} mm. for α ZnS, and up to 10^{-6} mm. for β ZnS. An x-ray diagram of the substance dried in vacuo at 300–350° showed no ZnS lines. There were lines corresponding to ZnO and indications of a transition of α and β ZnS into an ultradispersed amorphous modification. Catalyst spent in dehydrogenation of EtOH at 310–50° and EtPh at 600–50° also contained amorphous ZnS and cryst. ZnO; in the latter case the quantity of ZnO was higher. It is considered that with increasing temp. the quantity of ZnO in the catalyst increases as is the case in its regeneration with air at 450–500° for 3 hrs. The formation of ZnO is attributed to the presence of absorbed O on the surfaces of cryst. ZnS (Veselovskii, *C.A.* 37, 3087[4]). To roughly evaluate the catalytic activity of the various components of the catalyst in dehydrogenation of EtPh the deformation of valence angles of the C_2H_5-radical in its adsorption on ZnO, α and β ZnS were calcd. and the distribution of EtPh mols. on the lattice surfaces of each of the components were considered. It is concluded from this that ZnO has the highest catalytic activity followed by α ZnS, whereas the activity of β ZnS is insignificant.

M. Hosch

ISMAILZADE, I. G.

Crystal structure of organometallic compounds. III. X-ray study of the crystal structure of tin tetra-p-tolyl, $Sn(p\text{-}C_6H_4CH_3)_4$. I. G. Ismailzade and G. S. Zhdanov (L. Ya. Karpov Phys.-Chem. Inst., Moscow). Zhur. Fiz. Khim. [illegible] — The crystal structure of $Sn(p\text{-}C_6H_4CH_3)_4$ (I) was detd. by direct construction of a projection of the electron d. $\rho(x, y)$. The parameters are ϕ = 14° + 16° and ϕ = 44° ± 2°. The space group of cryst. I is $S_4^2\text{-}I\bar{4}$; free rotation of the Me group is absent. The interat. distances are tabulated.

J. W. Lowebert, Jr.

MA

NST

USSR/ Geology - Volcanic action

Card 1/1 Pub. 86 - 12/33

Authors : Ismailzade, I. G., Cand. Chem. Sci.; and Bagbanly, K. A., Cand. Tech. Sci.

Title : Marine and volcanoes

Periodical : Priroda 43/11, 94-95, Nov 1954

Abstract : It is found that some islands near Baku in the Caspian sea were formed by mud volcanoes. Their formation and growth is traced with dates and dimensions stated. Some of the islands have disappeared again beneath the water.

Institution : ...

Submitted : ...

ISMAILZADE, I.G.

X-ray examination of the structure of solid solutions of barium and lead titanates. Dokl.AN Azerb.SSR 11 no.8:527-532 '55. (MLRA 9:1)

1.Institut nefti AN Azerbaydzhanskoy SSR. Predstavleno deystv. chlenom AN Azerbaydzhanskoy SSR M.F.Nagiyevym.
(X rays--Industrial application) (Lead titanates)
(Barium titanates)

ISMAILZADE, I. G.

USSR/ Chemistry - Organic chemistry

Card 1/1 Pub. 22 - 29/62

Authors : Mamedaliyev, Yu. G., Act. Memb. of Ac. Sc., Azerb. SSR.; Ismailzade, I. G.; Mirzoyeva, Sh.; Zeynalova, T.; and Abdullayeva, Kh. M.

Title : Analysis of isomers of dialkylbenzenes

Periodical : Dok. AN SSSR 102/3, 529-530, May 21, 1955

Abstract : A new method is described for the analysis of dialkyl substitutes of benzene through roentgenographic quantitative determination of each phthalic acid isomer present in oxidation products. The accuracy of the analysis method is of the order of 4-5%. In addition this new method eliminates the difficult task of classifying and dividing the phthalic acid isomers according to their solubility. Some results obtained by the new method are listed. Five references: 4 USSR and 1 USA (1938-1952). Table.

Institution : Acad. of Sc., Azerb. SSR, Inst. of Petroleum

Submitted : October 30, 1954

Ismailzade, I. G.

USSR/ Analytical Chemistry - Analysis of Organic Substances G-3

Abs Jour : Referat Zhur - Khimiya, No 4, 1957, 12157

Author : Ismailzade I.G., Mamedaliyev Yu.G., Mirzoyeva Sh., Zeynalova T., Abdullayeva Kh.M.

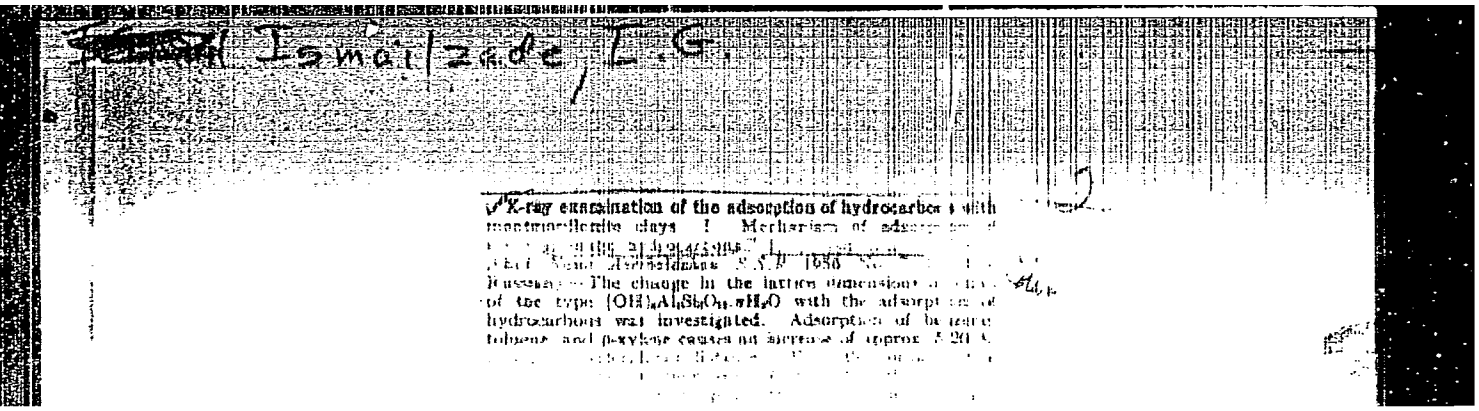
Inst : Academy of Sciences Azerbaydzhan SSR

Title : New Method of Analysis of Isomeric Dialkylbenzenes

Orig Pub : Izv. AN AzSSR, 1956, No 4, 25-31

Abstract : The available methods of chemical separation of dialkyl-substituted benzenes are not accurate. The new method of analysis of dialkyl-substituted benzenes is based on comparison of intensity of the characteristic x-ray diffraction lines of isomers of phthalic acid. The method yields entirely satisfactory results.

Card 1/1



Ismail-Zade, I. G.

X-ray examination of the adsorption of hydrocarbo[illegible] with montmorillonite clays. I. Mechanism of adsor[illegible]

[illegible] 1958

[illegible] The change in the lattice dimensions [illegible] of the type $(OH)_4Al_8Si_8O_{16} \cdot nH_2O$ with the adsorpt[illegible] of hydrocarbons was investigated. Adsorption of benzene, toluene and p-xylene causes an increase of approx. 5.20 A.

toluene, and p-xylene cause an increase of approx. 8.20 A in $d_{??}$ (d is interplanar distance). From the normal lattice parameters and the dimensions of the hydrocarbon mol. it is proposed that the change in the lattice is due to the ad- [illegible] perpendicular to the plane of the [illegible] [illegible] increase in the lattice is explained by [illegible]

[illegible]

hydrocarbon. Alexis I. Kazjoff

ISMAILZADE, I. G.

20-3-15/59

AUTHOR: Ismailzade, I.G.

TITLE: The Radiographic Investigation of the Influence of a Unilateral Pressure on the Structure of Polycrystalline Barium Titanate (Rentgenograficheskoye issledovaniye vliyaniya odnostoronnego davleniya na strukturu polikristallicheskogo titanata bariya)

PERIODICAL: Doklady Akademii Nauk SSSR, 1957, Vol. 115, Nr 3, pp. 479-482 (USSR)

ABSTRACT: The present paper investigates Seignette electrics under pressure. The influence of a unilateral pressure of the order of magnitude 600 to 1000 kg/cm^2 on the structure of barium titanate is a very weak effect and therefore the employment of the usual photographic method of the x-ray analyis is unsuitable. Therefore the author carried out the investigation by the ionisation method by means of the x-ray device UPS-50-1. The author constructed a simple x-ray goniometer head by which the sample to be investigated can be compressed in the direction of the axle of this head. The barium titanate sample had the form of a rectangular plate with a cross section of 2 mm^2. All x-ray photographs were taken with filtered copper rays, the performance of the measurements is described. In this manner the diffraction maxima of the

Card 1/3

The Radiographic Investigation of the Influence of a Unilateral Pressure on the Structure of Polycrystalline Barium Titanate

planes (110) + (011), (200), (002),(103) and (224) were determined without pressure and under a unilateral pressure of 700 kg/cm^2, the diffraction maxima of the planes (110) + (011), (200) and (002) also under a pressure of 100 kg/cm^2. The data obtained from a comparison of the various curves are summarized in a table. The following may be seen from this table: 1.) In the reflection on the planes (200) and (301) under pressure the diffraction maxima shift toward larger angles, but in the case of (002), (103) and (224) they shift toward smaller angles. 2.) At increasing pressure the absolute amounts of the displacements of the maxima increase. Under unilateral pressure the periods a and b in the lattice of $BaTiO_3$ become shorter, but the period c becomes larger. The influence of the unilateral pressure on the structure of Ba - titanate can be explained with the use of the expression for the free energy. The increase in the period c and the reduction of the periods a and b render the transition into the cubic lattice difficult. This means that a higher temperature is needed for the phase transition from the tetragonal to the cubic lattice. There are 4 figures, 2 tables and 5 references, 2 of which are Slavic.

20-3-15/59

The Radiographic Investigation of the Influence of a Unilateral Pressure on the Structure of Polycrystalline Barium Titanate

ASSOCIATION: Petroleum Institute of the AN Azerbaydzhan SSR (Institut nefti Akademii nauk AzerbSSR)

PRESENTED: March 12, 1957, by N.V. Belov, Academician

SUBMITTED: July 6, 1957

AVAILABLE: Library of Congress

Card 3/3

AUTHOR: Ismailzade, I.G. SOV/70-3-1-14/26

TITLE: Crystalline Structure of the Systems $Cd_2Nb_2O_7$-$Sr_2Nb_2O_7$ and $Cd_2Nb_2O_7$-$NaBiNb_2O_7$ (Kristallicheskaya struktura sistem $Cd_2Nb_2O_7$-$Sr_2Nb_2O_7$ and $Cd_2Nb_2O_7$-$NaBiNb_2O_7$)

PERIODICAL: Kristallografiya, 1958, Vol 3, Nr 1, pp 85 - 86 (USSR)

ABSTRACT: It is well-known that $Cd_2Nb_2O_7$ has a Curie point at 170 °K (Refs 1, 2). The crystalline structure of this compound was fully investigated by Jona et al (Ref 3). It is of interest to study the structure of the solid solutions of $Cd_2Nb_2O_7$ with compounds of the type of $A_2B_2O_7$. Jona et al have shown that in the case of:

$Cd_2Nb_2O_7$-$Pd_2Nb_2O_7$, $Cd_2Nb_2O_7$-$Ca_2Nb_2O_7$ and $Cd_2Nb_2O_7$-$Cd_2Ta_2O_7$ the replacement of Cd or Nb by other ions leads to a decrease in the Curie temperature. The present paper reports preliminary results of studies of the structure of

Cardl/3

Crystalline Structure of the Systems $Cd_2Nb_2O_7$-$Sr_2Nb_2O_7$ and $Cd_2Nb_2O_7$-$NaBiNb_2O_7$

$Cd_2Nb_2O_7$-$Sr_2Nb_2O_7$ and $Cd_2Nb_2O_7$-$NaBiNb_2O_7$. The specimens were synthesized under the direction of G.A. Smolenskiy at the Institut khimii silikatov AN SSSR (Institute of the Chemistry of Silicates of the Ac.Sc.USSR). The electrical properties of the systems were also studied at that institute. All the lines given by $NaBiNb_2O_7$ can be interpreted on the basis of a tetragonal cell with a = 11.036 and c = 11.292 Å. $Sr_2Nb_2O_7$ has a much more complex structure which has not as yet been disentangled. Analysis of powders of $Cd_2Nb_2O_7$-$Sr_2Nb_2O_7$ and $Cd_2Nb_2O_7$-$NaBiNb_2O_7$ shows that in the case of the concentrations studied, solid solutions are formed which have pyrochlore structure. Tables 1 and 2 summarize the data obtained for these solutions. G.A. Smolenskiy and V.A. Isupov are thanked

Crystalline Structure of the Systems $Cd_2Nb_2O_7$-$Sr_2Nb_2O_7$ and $Cd_2Nb_2O_7$-$NaBiNb_2O_7$

for their interest and assistance. There are 2 tables and 3 English references.

ASSOCIATION: Institut nefti AN Azerb. SSR (Institute of Petroleum of the Ac.Sc. Azerbaydzhan SSR)

SUBMITTED: March 23, 1957

Card 3/3

AUTHOR: Ismailzade, I.G. 70-3-2-4/26

TITLE: The Crystal and Molecular Structure of Tetra-para-methoxyphenyl Tin (Kristallicheskaya i molekulyarnaya struktura tetra-para-metoksifenil olova)

PERIODICAL: Kristallografiya, 1958, Vol 3, Nr 2, pp 155 - 159 (USSR).

ABSTRACT: Preliminary examinations of the compound $Sn(C_6H_4OCH_3)_4$ were made earlier together with G.S. Zhdanov (DAN, 18, 1, 95, 1949 and Zh.Fiz.Khim, 1950, Vol.24, and 1949) giving the cell size, a = 14.30 and c = 6.50 A and the probable space group as $S_4^2=I\bar{4}$. Geometrical analysis of a plausible model with symmetry $\bar{4}$ using normal bond lengths and van der Waals distances gave a trial structure with the parameters for the tilt of the benzene nucleus of $\emptyset = 17^0$, $\Psi = 49^0$. All projections except xy0 show considerable overlapping of atoms so that only the xy0 Fourier projection was calculated. 67 terms were used. The following atomic co-ordinates were found: Sn (0, 0, 0); C_1 (0.119, 0.027); C_2 (0.114, 0.091); C_3 (0.201, 0.114); C_4 (peak not visible); C_5 (0.280, 0.037);

Card1/2

70-3-2-4/26

The Crystal and Molecular Structure of Tetra-para-methoxyphenyl Tin

C_6 (0.208, 0.001); O (0.360, 0.099); C_7 (0.462, 0.045). These correspond to angular parameters of $\varphi = 17^\circ \pm 1^\circ$; $w = 43^\circ \pm 2^\circ$; $\varphi = 47^\circ \pm 1^\circ$ with $x_{C_7} = 0.455$ and $y_{C_7} = 0.064$. Considerable distortions were found in the benzene ring but in view of the non-appearance of C_4 in its expected position in the projection and the agreement between observed and calculated structure factors, which is only moderately good, the detailed conclusions should be treated with reserve. Corrections for X-ray absorption in the crystals were not applied. There are 3 figures, 2 tables and 5 Soviet references.

ASSOCIATION: Institut nefti AN Azerb SSR (Oil Institute, Ac.Sc. Azerbaijan SSR)

SUBMITTED: October 7, 1957

Card 2/2

NAGIYEV, M.F.; EFENDIYEV, R.M.; ISMAILZADE, I.G.

Synthesis of some organic compounds of practical importance based on the reaction CO H_2 taking place in an electric discharge.

Dokl. AN Azerb. SSR 14 no.5:347-355 '58. (MIRA 11:5)

1.Institut nefti AN AzerSSR.
(Electric discharges through gases)
(Chemistry, Organic--Synthesis)

MEKHTIYEV, S.D.; ISMAILZADE, I.G.; ALIYEV, A.F.; AGAYEV, U.Kh.; MAMEDOV, F.A.

Structure of 1-chloromethylcyclohexane isomers and the composition of products of the photochemical monochlorination of methylcyclohexane. Dokl. AN Azerb. SSR 14 no.12:985-990 '58. (MIRA 12:1)

1.Institut nefti AN Azerb. SSR.
(Cyclohexane)

24(2)
AUTHOR: Ismailzade, I. G. SOV/48-22-12-18/33

TITLE: Crystalline Structure of the $BaTiO_3$ - $LaAlO_3$ System
(Kristallicheskaya struktura sistemy $BaTiO_3$ - $LaAlO_3$)

PERIODICAL: Izvestiya Akademii nauk SSSR. Seriya fizicheskaya, 1958, Vol 22, Nr 12, pp 1483-1484 (USSR)

ABSTRACT: There are solid $BaTiO_3$ solutions with ABO_3 compounds, in which Ba- and A-, Ti- and B-ions, have different valencies. Such solid solutions are formed in the $BaTiO_3$ - $LaAlO_3$ system. In the present paper their crystalline structure is investigated. The synthesis and measurements of all the samples were carried out by Smolenskiy, Agranovskaya and Sholokhova. They proved that in the $BaTiO_3$ - $LaAlO_3$ system solid solutions are formed that possess piezoelectric properties with a $LaAlO_3$ content not exceeding 16%mole. The introduction of $LaAlO_3$ in $BaTiO_3$ rapidly decreases the Curie temperature and diminishes the dielectric permeability in the peak of the solid solutions. The structures

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of all the samples were investigated both by means of the usual photographic method and by recording the diffraction maxima, and also by means of the ionization method at the URS-50-I Röntgen diffractometer. The objects were taken under filtered copper irradiation (λ = 1.5418 Å). The periods of the elementary cells were determined according to diffraction maxima 233 and 332, which were recorded according to the point method. 11 samples were investigated: $BaTiO_3$, 9 samples $BaTiO_3$ with different $LaAlO_3$ contents and $LaAlO_3$. It was ascertained that with 0-25% of $LaAlO_3$ solid solutions are formed in the concentration, that crystallize with a perovskite structure. A heterogeneous mixture is formed at 50%mole $LaAlO_3$. The parameters of elementary cells are given in the table. With an increase of the molar content of $LaAlO_3$ in solid solutions the lattice periods a and c become smaller. At $95BaTiO_3$ - $5LaAlO_3$ a = c, i.e., the lattice turns from a tetragonal into a cubical syngony. This agrees with the electric measuring results of all samples (Table). The author thanks G. A. Smolenskiy for placing samples at his disposal.

Crystalline Structure of the $BaTiO_3$ - $LaAlO_3$ System SOV/48-22-12-18/33

There are 1 table and 9 references, 3 of which are Soviet.

ASSOCIATION: Institut nefti Akademii nauk Azerbaydzhanskoy SSR
(Petroleum Institute, Academy of Sciences, Azerbaydzhanskaya SSR)

Card 3/3

24(2)

AUTHOR: Ismailzade, I. G. SOV/48-22-12-19/33

TITLE: Crystalline Structure of Niobates and Tantalates of Bivalent Metals and of Their Solid Solutions (Kristallicheskaya struktura niobatov i tantalatov dvukhvalentnykh metallov i ikh tverdykh rastvorov)

PERIODICAL: Izvestiya Akademii nauk SSSR, Seriya fizicheskaya, 1958, Vol 22, Nr 12, pp 1485-1487 (USSR)

ABSTRACT: In the present paper a few provisional results obtained by the investigation of the structure of a great number of niobates and tantalates of bivalent metals and of their solid solutions are given. All objects were synthesized at G. A. Smolenskiy's Laboratory. The method employed for their preparation is described in reference 7. Roentgenographic investigations of polycrystalline samples were carried out at room temperature (20-30°), with copper irradiation by means of the powder method and the ionization method on the URS-50-I roentgen diffractometer. Investigation results of the structures of ABO_3 compounds as well as a few data from publications are given in table 1. In table 2 the investigation results of $A_2B_2O_7$-compounds are shown.

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Investigations (Ref 4) have shown that the substitution of cadmium ions or niobium ions by others

(Cd^{2+} by Pb^{2+} and Ca^{2+}; Nb^{5+} by Ta^{5+})

in cadmium pyroniobate causes the decrease of the Curie (Kyuri) point. In order to detect the effect of the ion substitution in strontium pyrotantalate, Smolenskiy and Isupov investigated the electric properties of the $Sr_2Ta_2O_7$-$Sr_2Nb_2O_7$, $Sr_2Ta_2O_7$-$Ba_2Ta_2O_7$ and $Sr_2Ta_2O_7$-$Ca_2Ta_2O_7$ systems (Refs 10, 11). The structure of these systems was investigated by the author. With $Sr_2Ta_2O_7$ and $Cd_2Nb_2O_7$ the ion substitution causes a change of the Curie point in the same direction. It can be concluded therefrom that they possess a similar piezoelectricity. In spite of the fact that $Cd_2Ta_2O_7$ and $Cd_2Nb_2O_7$ have a similar structure, no piezoelectric properties were found in them. Apparently this is related to the very low Curie point, which is conditioned by the presence of the Ta^{5+}-ion in the pyrochlore structure.

Crystalline Structure of Niobates and Tantalates of Bivalent Metals and of Their Solid Solutions SOV/48-22-12-19/33

The author thanks G. A. Smolenskiy and V. A. Isupov for the interest displayed. There are 2 tables and 11 references, 4 of which are Soviet.

ASSOCIATION: Institut nefti Akademii nauk AzSSR
(Petroleum Institute, Academy of Sciences, Azerbaydzhanskaya SSR)

Card 3/3

ISMAILZADE, I. G.

"Crystal Structures of Some Ferroelectric Compounds of the Types $A(B_1, B_2)O_3$ and $(A_1A_2)Nb_2O_6$"

a report presented at Symposium of the International Union of Crystallography Leningrad, 21-27 May 1959

PISHNAMAZZADE, B.F.; ISMAILZADE, I.G.; KOSHELEVA, L.M.; GASHUMOVA, F.A.; MAMEDOV, F.A.

Hydroaromatic hydrocarbons of the 140-175°C fraction of the petroleum in the Kirmaki series of the Buzovny field. Azerb. khim.zhur. no.1:53-64 '59. (MIRA 13:6)
(Buzovny region--Petroleum--Analysis)
(Hydrocarbons)

SOV/70-4-3-21/32

AUTHOR: Ismailzade, I.G.

TITLE: The Results of Preliminary X-ray Investigations of Specimens of $Pb(Nb_{0.5}Sc_{0.5})O_3$ and $Pb(Ta_{0.5}Sc_{0.5})O_3$

PERIODICAL: Kristallografiya, 1959, Vol 4, Nr 3, pp 417-419 (USSR)

ABSTRACT: It has been shown by Smolenskiy, Isupov and Agranovskiy (Zh. tekhn.fiz - in press) that $Pb(Nb_{0.5}Sc_{0.5})O_3$ and $Pb(Ta_{0.5}Sc_{0.5})O_3$ are ferroelectric of the perovskite type with Curie points of 90 and 26°, respectively. Powder photographs were taken at 30-32° with Cu radiation and show close grouping of the lines 105, 314, 413, 431, 501, 510 which form a single broadened line for the Nb compound. A URS-50I diffractometer was used. Both compounds showed lines such as N = 3 1/4, 4 3/4, 6 2/4, 8 1/4, 11 2/4, 14 3/4, 21 1/4 which indicate that the true unit cell must be doubled in one direction due to ordering of the 5-valent and 3-valent ions. The Ta compound, in particular, shows this effect. The cell dimensions found were:

Card1/2

SOV/70-4-3-21/32

The Results of Preliminary X-ray Investigations of Specimens of $Pb(Nb_{0.5}Sc_{0.5})O_3$ and $Pb(Ta_{0.5}Sc_{0.5})O_3$

Ta compound: $a = 4.072 \pm 0.001 = c$;

Nb compound: $a = 4.074 \pm 0.001$

$c = 4.083 \pm 0.001$ Å .

Acknowledgments are made to G.A. Smolenskiy.
There are 1 figure, 1 table and 4 references, of which 2 are Soviet and 1 English, 1 Japanese.

ASSOCIATION: Institut nefti (Oil Institute)
Azerb. SSR Academy of Sciences.

SUBMITTED: May 4, 1958

Card 2/2

24.7300,24.2800

75983
SOV/70-4-5-5/36

AUTHOR: Ismailzade, I. G.

TITLE: Study of the Structure of the Strontium-, Lead-, Barium Metatantalates, of the (Pb,Ba,Sr,Ca)Nb_2O_6 and (Pb,Sr,Ba)-Nb_2O_6 Isomorphous Series, by X-ray Diffraction Methods

PERIODICAL: Kristallografiya, 1959, Vol 4, Nr 5, pp 658-662 (USSR)

ABSTRACT: The first subgroup of the oxygen octahedron group of ferroelectrics, the perovskites of ABO_3 type, are better known than the other two subgroups which include the compounds of AB_2O_6 and $A_2B_2O_7$ types. A means di- or monovalent metal, and B tetra- or pentavalent metal. The third subgroup includes $Cd_2Nb_2O_7$ and $Sr_2Ta_2O_7$, discovered by Smolenskiy, G. A., who also discovered the ferroelectric crystals of $PbTa_2O_6$ and $PbNb_2O_6$ compositions of the second subgroup. Here, the author has studied the structure of the ferroelectric modifications of the compounds mentioned in the title, all of

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which belong to the second subgroup. The nonferroelectric rhombohedral modifications, formed at lower temperatures of annealing, were not studied. He found that the structures of the ferroelectric $PbTa_2O_6$, $(Pb,Ca)Nb_2O_6$, $(Pb,Sr)Nb_2O_6$, $(Pb,Ba)Nb_2O_6$, and (Pb,Sr,Ba)-$-Nb_2O_6$ are, below the Curie points (Fig. 3), similar to that of the known orthorhombic $PbNb_2O_5$ whose Curie point is 570° C. On the other hand, the $SrTa_2O_6$ and $BaTa_2O_6$ structures proved, at indoor temperatures, to be similar to that of the nonferroelectric tetragonal phase of $PbTa_2O_6$ which is stable above the Curie point (260° C). The polycrystalline samples were annealed at 1,460° C. Then the X-ray powder photographs were taken by CuK_α - radiation at temperatures varying from

Study of the Structure of the Strontium-, Lead-, Barium Metatantalates, of the $(Pb,Ba,Sr,Ca)Nb_2O_6$ and $(Pb,Sr,Ba)Nb_2O_6$ Isomorphous Series, by X-ray Diffraction Methods

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22° C to 280° C, and the lattice constants were refined by the X-ray diffractometer URS-50I to the accuracy of ± 0.002 A. The figures are compiled in Tables 1 and 2.

Table 1

Cell dimensions	$SrTa_2O_6$	$PbTa_2O_6$					$BaTa_2O_6$
	t°C						
	24	24	100	200	240	280	24
a (Å)	17,600	17,605	17,645	17,660	17,680	17,688	17,800
b (Å)	17,600	17,720	17,715	17,710	17,705	17,688	17,800
c (Å)	7,703	7,749	7,755	7,770	7,775	7.785	7,840
b/a	1,00	1,006	1,004	1,003	1,0015	1,000	1,000
V (Å^3)	2386,0	2417,0	2423,0	2430,0	2432,0	2434	2484,0

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Table 2

(Pb, Bn) Nb_2O_6 isomorphous series

$BaNb_2O_6$ (mol. %)	10	20	30	40
a (Å)	17,720	17,775	17,814	17,846
b (Å)	18,025	18,060	18,070	18,140
c (Å)	7,745	7,760	7,775	7,806
V (Å^3)	2474,0	2491,0	2503,0	2527,0

Система (Pb, Sr, Ba) Nb_2O_6 isomorphous series

$PbNb_2O_6$		50	45	50	45	55	50	50
$SrNb_2O_6$	%	42,5	45	40	40	30	30	25
$BaNb_2O_6$	mol.	7,5	10	10	15	15	20	25
a (Å)		17,536	17,544	17,556	17,564	17,573	17,607	17,635
b (Å)		17,927	17,938	17,950	17,960	17,970	17,992	18,015
c (Å)		7,710	7,720	7,723	7,726	7,740	7,742	7,760
V (Å^3)		2424,0	2430,0	2434,0	2437,0	2444,0	2453,0	2465,0

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Study of the Structure of the Strontium-, Lead-, Barium Metatantalates, of the $(Pb,Ba,Sr,Ca)Nb_2O_6$ and $(Pb,Sr,Ba)Nb_2O_6$ Isomorphous Series, by X-ray Diffraction Methods

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SOV/70-4-5-5/36

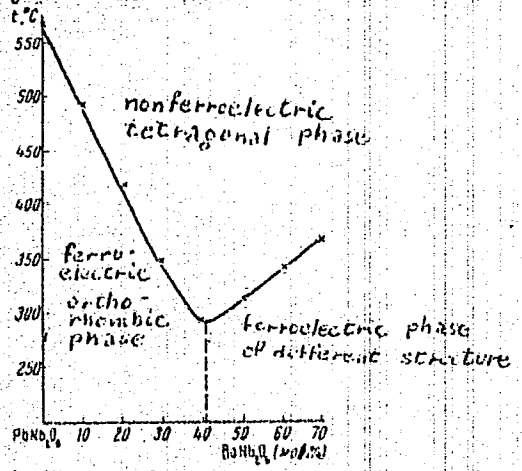

Fig. 3.

The Curie points as functions of the compositions are illustrated in Fig. 3. The isomorphous series of $PbNb_2O_6$+$CaNb_2O_6$ (up to 30% $CaNb_2O_6$) and $PbNb_2O_6$+$SrNb_2O_6$

Card 5/6

ISMAILZADE, I.G.

Crystal structure of lead, strontium, and barium metatantalates. Dokl. AN Azerb.SSR 15 no.1:13-16 '59. (MIRA 12:3)

1. Institut nefti AN AzerSSR. Predstavleno akademikom AN AzerSSR M.F. Nagiyevym.

(Tantalates)

PISHNAMAZZADE, B.F.; ISMAILZADE, I.G.; KOSHELEVA, L.M.; EYBATOVA, Sh.E.; MAMEDOV, F.A.

Hydroaromatic hydrocarbons of the fraction 140-175°C in crudes of the lower formation of the Karachukhur Field. Azerb.khim.zhur. no.3:65-75 '60. (MIRA 14:8)
(Hydrocarbons) (Petroleum—Analysis)

S/081/61/000/022/002/076
B102/B108

AUTHORS: Ismailzade, I. G., Musayev, M. R., Mamedov, F. A., Gasanova, N. E.

TITLE: Raman spectra of monoamyl benzene isomers

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 22, 1961, 15, abstract 22B88 (Azerb. khim. zh., no. 5, 1960, 73-76)

TEXT: The line frequencies and intensities of the Raman spectra of n-amyl benzene, tert-amyl benzene, 1-phenyl-3-methyl butane, and 2-phenylpentane were measured. In all spectra lines were observed which are characteristic of monoalkyl benzenes. Besides, lines were found in the spectra of each of the investigated compounds which permit distinguishing amyl benzenes with different structures of the side chains from one another. The line ~ 741 cm^{-1} was characteristic of all monoalkyl benzenes with isostructural side chains. Its intensity was found to decrease by about 50% with each CH_2 group for which the branching of the side chain of the aromatic carbon atom is reduced. The line ~ 732 cm^{-1} is characteristic of the secondary butyl and amyl benzenes. [Abstracter's note: Complete translation.]

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ISMAILZADE, I.G.

X-ray study of the systems $BaNb_2O_6$ - $CaNb_2O_6$ and $BaNb_2O_6$ - $SrNb_2O_6$. Kristallografiia 5 no.2:268-272 '60. (MIRA 13:9)

1. Institut neftekhimicheskikh protessov AN AzerbSSR.
(Braium niobate) (Calcium niobate) (Strontium niobate)

ISMAILZADE, I.G.

X-ray study of the system $Pb_3NiNb_2O_3$ - $Pb_3MgNb_2O_9$. Kristallografiia 5 no.2:316-317 Mr-Ap '60. (MIRA 13:9)

1. Institut neftekhimicheskikh protsessov AN AzerbSSR.
(Lead nickel niobate) (Lead magnesium niobate)

84998

9.2180

S/048/60/024/010/007/033
B013/B063

AUTHOR: Ismailzade, I. G.

TITLE: X-Ray Structural Analysis of Some New Piezoelectric Substances With a Layered Structure

PERIODICAL: Izvestiya Akademii nauk SSSR. Seriya fizicheskaya, 1960, Vol. 24, No. 10, pp. 1198 - 1202

TEXT: The author analyzed the structures of polycrystalline samples of $CaBi_2Nb_2O_9$, $CaBi_2Ta_2O_9$, $PbBi_2Nb_2O_9$, and Bi_3NbTiO_9. The X-ray pictures were taken with CuK_α radiation and by photographic and ionization methods. The temperature dependence of the lattice parameters was studied by means of a УРС-50И (URS-50I) apparatus which had an attachment designed by the author and V. I. Tutushkin. This attachment allowed the temperature of the samples to be raised to 750°C. The temperature dependence of the 040_{α_1} and 400_{α_1} maxima for $PbBi_2Nb_2O_9$ is illustrated in Fig.1. Similar results were obtained for three other compounds. The

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temperature dependence of the lattice parameters of $PbBi_2Nb_2O_9$ is graphically represented in Fig. 2, and for the three other compounds it is given in Table 1. It was found that the lattice symmetry of these compounds changes during the piezoelectric phase transition: C_{2v}^{18} (rhombic) $\rightleftarrows$ D_{4h}^{17} (tetragonal). Below the Curie point, b/a > 1, and above it, b/a = 1. This indicates that the vector of spontaneous polarization lies in the (001) plane and, presumably, runs in the direction [010]. Fig.3 shows the unit cell for $PbBi_2Nb_2O_9$, which consists of a perovskite layer perpendicular to [001], ($PbNb_2O_7$) being enclosed by two parallel Bi - O layers. The neighboring oxygen tetrahedra NbO_6 in the perovskite layer are interlinked by their pinacles. This is a typical feature of piezoelectric substances of the "oxygen-octahedral" type. The three other compounds exhibit a similar structure. In the perovskite layer $BiBi_2(NbTi)O_9$, i.e., in Bi_3NbTiO_9, the distribution of Nb and Ti ions is statistically unordered. It follows from Table 1 and Fig.2 that

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X-Ray Structural Analysis of Some New Piezoelectric Substances With a Layered Structure

S/048/60/024/010/007/033
B013/B063

the phase transition in the compounds under consideration is associated with a steady variation of V, i.e., it is a phase transition of second order. The variation of V indicates that the phase transition occurs, not at a point, but within a region. This conclusion is supported by the blurred peak of $\varepsilon = f(t)$ in $PbBi_2Nb_2O_9$ (Ref.2), for example. Due to the high electrical conductivity of the three other compounds at high temperatures, the region of phase transition was determined, not from $\varepsilon = f(t)$, but on the strength of the X-ray structural analysis (Table 2). The author thanks G. A. Smolenskiy for making available the samples and for valuable advice. V. I. Khodzhayeva and M. Kh. Annagiyev assisted in the experiments. The present paper was read at the Third Conference on Piezoelectricity, which took place in Moscow from January 25 to 30, 1960. There are 3 figures, 2 tables, and 3 references: 2 Soviet.

ASSOCIATION: Institut neftekhimicheskikh protsessov Akademii nauk AzSSR (Institute for Petrochemical Processes of the Academy of Sciences Azerbaydzhanskaya SSR)

Card 3/3

ISMAILZADE, I.G.

X-ray diffraction study of phase transitions in sodium niobate ($NaNbO_3$). Azerb.khim.zhur. no.2:95-103 '61. (MIRA 14:8)
(Sodium niobate)

ASHUMOV, G.G.; NASIROV, A.B.; ISMAILZADE, I.G.; MAMEDOV, F.A.

Indivudual hydrocarbon composition of the gasoline fraction of Mishovdag petroleum. Azerb. khim.zhur. no.3:33-39 '61. (MIRA 14:11)
(Mishovdag—Petroleum) (Hydrocarbons)

34887
S/081/62/000/003/065/090
B149/B101

11.0120

AUTHORS: Pishnamazzade, B. F., Ismailzade, I. G., Kosheleva, L. M. Mamedov, F. A., Gashumova, F. A., Eybatova, Sh. E.

TITLE: Determination of the nature of aromatic and hydroaromatic hydrocarbons in the fraction of a boiling point up to 200°C of the petroleum from the Buzovninskoye deposit (Kirmakinskaya formation)

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 3, 1962, 482, abstract 3M132(Azerb. khim. zh. no. 3, 1961, 41 - 53)

TEXT: The characteristics of the gasoline-ligroin fraction, final b. p. 220°C of petroleum from the Buzovninskiy deposit in the Kirmakinskaya formation were determined. It was found that the light fraction with the final b. p. 150°C had no aromatic hydrocarbons; the medium fractions 140 - 175°C and 175 - 200°C contain 0.73% and 4.12% aromatic hydrocarbons, respectively. The wide gasoline-ligroin fraction is a naphthene-based fraction with 71.36% naphthene hydrocarbons. Seven individual hydroaromatic hydrocarbons were found in the fraction of b. p. 61 - 140°C. Among

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these, 1,4-dimethyl-cyclohexane (41.78%), and 1,2- and 1,3-dimethyl-cyclohexane (10% and 8.69%) predominate. The nature of the aromatic hydrocarbons was determined for 76.12% of the aromatic concentrate in the fraction 140 - 175°C. 13 individual aromatic hydrocarbons were found containing mainly 9 or 10 carbon atoms. 19.91% of the 175 - 200°C fraction were identified; the nature of two individual hydrocarbons was determined, viz. 1,2-diethylbenzene and 1,2,4,5,-tetramethylbenzene. ≥50% of aromatic hydrocarbons isolated from 140 - 175°C fraction and >68% aromatic hydrocarbons separated from 175 - 200°C fraction have their boiling point higher than the terminal boiling point of the corresponding fraction. Three aromatic hydrocarbons in 140 - 175°C fraction corresponding to cyclohexane hydrocarbons were found in the fraction of b. p. 61 - 140°C, viz. 1,2,3,4-, 1,2,4-, and 1,3,5-trimethylbenzenes. [Abstracter's note: Complete translation.]

Card 2/2

NASIROV, A. B.; ASHUMOV, G. G.; ISMAILZADE, I. G.; KOSYKHIN, A. S.

Individual hydrocarbon composition of the gasoline fraction of Kyurovdag crudes. Azerb.khim.zhur. no.4:15-21 '61.
(MIRA 14:11)

(Kyurovdag—Petroleum—Analysis)
(Hydrocarbons)

PISHNAMAZZADE, B. F.; ISMAILZADE, I. G.; MAMEDOV, F.A.

Nature of products obtained in the conjugated dealkylation-alkylation of an aromatic concentrate from the 250-275°C boiling fraction of Balakhany heavy oils. Azerb.khim.zhur. no.4:31-43 '61. (MIRA 14:11)
(Balakhny--Petroleum--Analysis)
(Alkyl groups)

PISHNAMAZZADE, B.F.; ISMAILZADE, I.G.; KOSHELEVA, L.M.; EYBATOVA, Sh.E.
MAMEDOV, F.A.; KULIKOVA, S.A.

Nature of hexahydroaromatic hydrocarbons from the 140-175° C fraction of Surakhany selective oil. Azerb.khim.zhur. no.5: 9-21 '61. (MIRA 15:5)
(Hydrocarbons) (Surakhany—Petroleum—Analysis)

SHARASHINIDZE, Sh.S.; ASHUMOV, G.G.; NASIROV, A.B.; ISMAIL-ZADE, I.G.; MAMEDOV, F.A.

Investigating the individual composition of the gasoline fraction of Saskhen oil of the Samgora District of the Georgian S.S.R. Azerb.khim.zhur. no.5:23-30 '61. (MIRA 15:5)
(Samgora District--Petroleum--Analysis)

S/081/63/000/001/011/061
B101/B186

AUTHOR: Ismailzade, I. G.

TITLE: X-ray diffraction analysis of the phase transitions in ferroelectrics of laminated structure: $ABi_2B_2O_9$ (A = Sr, Ba, Bi; B = Nb^{5+}, Ta^{5+}, Ti^{4+}), $Bi_4Ti_3O_{12}$, $BaBi_4Ti_4O_{15}$ and $Ba_2Bi_4Ti_5O_{18}$

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 1, 1963, 71, abstract 1B476 (Azerb. khim. zh., no. 5, 1961, 91 - 104 [summary in Azerb.])

TEXT: A phase transition from rhombic to tetragonal structure occurs in ferroelectrics of laminated structure such as $SrBi_2Nb_2O_9$, $SrBi_2Ta_2O_9$, $BaBi_2Nb_2O_9$, $BaBi_2Ta_2O_9$, $Bi_4Ti_3O_{12}$, and $BaBi_4Ti_4O_{15}$. With $Bi_4Ti_3O_{12}$ the phase transition occurs at ~730°C. $Ba_2Bi_4Ti_5O_{18}$ has a laminated structure similar to that of $Bi_4Ti_3O_{12}$; the number of octahedral layers is five in each perovskite-like layer. The specimen $3BaTiO_3 \cdot Bi_4Ti_3O_{12}$ consists of

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S/081/63/000/001/011/061
B101/B186

X-ray diffraction analysis of the...

two phases: of a perovskite type, and of a laminated one of the $Bi_4Ti_3O_{12}$ type. [Abstracter's note: Complete translation.]

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S/081/62/000/018/032/059
B158/B180

AUTHORS: Fishnamazzade, B. F., Ismailzade, I. G., Kosheleva, L. M., Eybatova, Sh. E., Mamedov, F. A.

TITLE: Examination of the nature of hexahydroaromatic hydrocarbons in the 140-175°C fraction of Balakhano heavy oil

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 18, 1962, 442, abstract 18M103 (Azerb. khim. zh., no. 6, 1961, 27-36 [summary in Azerb.])

TEXT: Twenty-five hexahydroaromatic hydrocarbons (HH), 23 of which are monocyclic and 2 bicyclic, have been found by optical methods in the dearomatized 140-175°C fraction of heavy Belakhano oil. Predominant among the monocyclic hydrocarbons are: propylcyclohexane (4.35%), 1-methyl-2-ethylcyclohexane (2.65%), 1-methyl-3-ethylcyclohexane (2.31%) and 1-methyl-4-ethylcyclohexane (2.07%); among the bicyclic - hydrindane (2.38%). Of the HH found, the largest group, 43.83%, was the disubstituted; the mono-, tri- and tetrasubstituted were, respectively,

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Examination of the nature of ...

20.09, 24.80 and 12.5%. No hydrocarbons with a side chain containing > 4 C atoms were discovered in the HH complex. [Abstracter's note: Complete translation.]

Card 2/2

ALIYEV, A.F.; MAMEDOV, F.A.; ISMAILZADE, I.G.; MEKHTIYEV, S.D.

Composition of chlorination products of some chclohexane hydrocarbons. Azerb.khim.zhur. no.6:73-86 '61. (MIRA 15:5)
(Cyclohexane) (Chlorination)

ISMAILZADE, I.G.; ANNAGIYEV, M.Kh.; ABDULLAYEVA, Kh.M.

X-ray diffraction study of the phase transition in $NaNO_2$.
Kristallografiia 6 no.5:733-736 S-O '61. (MIRA 14:10)

1. Institut neftekhimicheskikh protsessov AN AzerbSSR.
(Sodium nitrite) (X-ray crystallography)

ISMAILZADE, I.G.

X-ray diffraction analysis of the phase transitions in sodium tantalate. Kristallografiia 7 no.5:718-723 S-O '62. (MIRA 15:12)

1. Institut neftekhimicheskikh protsessov AN Azerbaydzhanskoy SSR.
(X-ray crystallography) (Sodium tantalate)

ISMAILZADE, I. G.

"X-ray Studies of High-Temperature Phase Transitions in $NaNbO_3$, $NaTaO_3$ and their Solid Solutions."

report presented at the Symposium on Ferroelectricity and Ferromagnetism, Leningrad, 30 May - 5 June 1963.

PISHNAMAZZADE, B.F.; ISMAILZADE, I.G.; KOSHELEVA, L.M.; EYBATOVA, Sh.E.; MAMEDOV, F.A.; ORUDZHEVA, T.M.; MAMEDOV, G.M.

Nature of hydroaromatic hydrocarbons of the fraction boiling at 140-175°C from Kirmaki series in the Neftyanyye Kamni offshore field. Azerb. khim. zhur. no.2:3-11 '63. (MIRA 16:8)

MAMEDOV, F.A.; MUSAYEV, M.R.; ISMAILZADE, I.G.

Raman spectra of monoamylcyclohexane isomers. Azerb. khim. zhur. no.2:71-74 '63. (MIRA 16:8)

L 12803-63 EWP(q)/EWT(m)/BDS AFFTC/ASD JD
ACCESSION NR: AP3000767 S/0070/63/008/003/0351/0355

63
60

AUTHOR: Ismailzade, I. G.

TITLE: X-ray structure studies of some compounds having the compostion A(B' sub x, B" sub 2-x) O sub 6, (A' sub 0.8, A" sub 0.4)Nb sub 2 O sub 6 and (Ba sub 0.4 Sr sub 0.2, Ca sub 0)TiO sub 3 (A = Sr, Ba; B' = Fe, Mg; B" = Nb, A' = K; A" = La, Bi)

SOURCE: Kristallografiya, v. 8, no. 3, 1963, 351-355

TOPIC TAGS: x-ray structure, paraelectricity, tetragonal system, orthorhombic system, cubic system, perovskite, K, Bi, Nb, O, Pb, Ta, La, Sr, Ba, Fe, Mg, refractive indices

ABSTRACT: Nine compounds of complex compostition have been studied to relate crystal structure with electrical properties. It is shown that specimens with the general formula (A' sub 0.8, A" sub 0.4) Nb sub 2 O sub 6 have structure such as the paraelectric (tetragonal)phase of lead metaniobate (or tantalate). K sub 2 BiNb sub 5 O sub 15 has the structure of the ferroelectric (orthorhombic) phase of PbNb sub 2 O sub 6 (or PbTa sub 2 O sub 6), a fact in agreement with electrical measurements. Compounds of Na sub 2 LaNb sub 5 O sub 15 and Na sub 2 BiNb sub 5 O sub 15 crystallize in the structure of perovskite, of the cubic phase of NaNbO sub 3 (or NaTaO sub 3). "I consider it my pleasant duty to

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L 12803-63
ACCESSION NR: AP3000767

thank Professor G. A. Smolenskiy and V. A. Isupov for supplying samples and for furnishing useful advice." Orig. art. has: 3 figures and 2 tables.

ASSOCIATION: Institut neftekhimicheskikh protsessov im. akad. Yu. G. Mamedaliyeva AN AzerbSSR (Institute of Petroleum-Chemical Processes AN AzSSR)

SUBMITTED: 01Nov61 DATE ACQ: 21Jun63 ENCL: 00

SUB CODE: PH NO REF SOV: 004 OTHER: 003

Card 2/2

L 12801-63 EWP(q)/EWT(m)/BDS AFFTC/ASD JD/JG
ACCESSION NR: AP3000769 S/0070/63/008/003/0363/0367

AUTHOR: Ismailzade, I. G.

TITLE: New data on x-ray studies of phase transitions in sodium niobate

SOURCE: Kristallografiya, v. 8, no. 3, 1963, 363-367

TOPIC TAGS: phase transitions, polycrystal, x-ray diffraction, antiferroelectricity paraelectricity, superlattice, sodium niobate, sodium carbonate, niobium oxide

ABSTRACT: Studies were made on polycrystalline sodium niobate, which was prepared by heating sodium carbonate and niobium oxide for an hour at 1050C and then further at 1230-1290C. The test material was shaped in the form of a disk about 1.83 mm thick and 8 mm in diameter. Diffraction maximums were measured by the ionization method on an URS-501 diffractometer, using Fe K sub Alpha sub 1 radiation. In addition to the phase transitions observed by other workers, the author discovered a transition at 570C, which he associates with change in the inclination of niobium-oxide octahedrons toward the crystallographic axis. He concludes that superlattice lines that appear above 520C are due to "crumpling" of the niobium-oxide octahedrons, that the inclination of these octahedrons to the crystallographic axis is partly removed at 570C and is completely removed at 635C. The resulting unit cell is cubic. "I express deep thanks to Professor G. A. Smolenskiy

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L 12801-63
ACCESSION NR: AP3000769

and to V. A. Isupov for preparation of the sodium-niobate samples and for useful advice. I also extend thanks to A. G. Movsumov for his aid in preparing the graphic material." Orig. art. has: 2 figures and 2 table.

ASSOCIATION: Institut neftekhimicheskikh protsessov im. Yu. G. Mamedaliova AN AzerbSSR (Institute of Petroleum-chemical Processes AN AzSSR)

SUBMITTED: 02Apr62 DATE ACQ: 21Jun63 ENCL: 00

SUB CODE: oo NO REF SOV: 005 OTHER: 006

Card 2/2

MAMEDOV, Shamkhal; NIZKER, I.L.; ISMAYILZADE, I.G.; MAMEDOV, F.A.; MAMEDOV, I.M.

Synthesis and study of Raman spectra of alicyclic/ω-chloro ethers. Dokl. AN Azerb. SSR 19 no.1:23-26 '63. (MIRA 16:4)

1. Institut neftekhimicheskikh protsessov AN AzSSR. Predstavleno akademikom AN AzSSR M.A.Dalinym.
(Cyclic compounds—Spectra)

MAMEDOV, F.A.; ISMAILZADE, I.G.; ALIYEV, A.F.; MEKHTIYEV, S.D.

Application of the Raman effect method for studying the composition of monochloride fractions of the chlorination products of some cyclohexane hydrocarbons. Dokl. AN Azerb. SSR 19 no.7:9-13 '63. (MIRA 17:12)

1. Institut neftekhimicheskikh protsessov AN AzerSSR.

ISMAILZADE, I.G.

X-ray diffraction study of the ferroelectric phase transistion in $Ba_2Bi_4Ti_5O_{18}$ and phase transitions in the compounds $A_{m-n+1}Bi_nB_mO_{3m+3}$ ($A = Ca^{2+}, Sr^{2+}, Ba^{2+}, Pb^{2+}, Bi^{3+}$; $B = Nb^{5+}, Ta^{5+}, Ti^{4+}$). Kristallografiia 8 no.6:852-858 N-D'63. (MIRA 17:2)

1. Institut neftekhimicheskikh protsessov imeni akademika Yu.G. Mamedaliyeva AN Azerbaydshanskoy SSR.

PISHNAMAZZADE, B.F.; ISMAILZADE, I.G.; KOSHELEVA, L.M. ; EYBATOVA, Sh.E.; MAMEDOV, F.A.; ORUDZHEVA, T.M.

Investigation of the nature of the hydroaromatic hydrocarbons of the fraction of 140-175° from the petroleum of the Neftyanyye Kamni field. Nefteper. i neftekhim. no.10:12-14 '63. (MIRA 17:2)

1. Institut neftekhimicheskikh protsessov, g. Baku.

ASHUMOV, G.G.; NASIROV, A.B.; ISMAILZADE, I.G.; GYUL', E.K.; MAMEDOV, F.A.

Hydrocarbon composition of gasoline fractions obtained from Karadag waxy crudes (Puta. Supra-Kirmaki sand series). Azerb. khim. zhur. no.1:23-29 '64. (MIRA 17:5)

ASHIMOV, M.A.; ISMAILZADE, I.G.; KYAZIMOVA, Kh.B.; KADZHAR, A.Sh.
GASANOV, R.G.; MURSALOVA, M.A.

Composition and structure of alkyl aromatic hydrocarbons obtained in the course of the production of azolyat A.
Azerb. khim. zhur. no.1:111-115 '64. (MIRA 17:5)

ACCESSION NR: AP4039401 S/0070/64/009/003/0412/0413

AUTHORS: Ismailzade, I. G.; Verbitskaya, T. N.; Nesterenko, V. I.

TITLE: Preliminary data on the x-ray investigation of VK-3 ferroelectric ceramic in steady electrical fields

SOURCE: Kristallografiya, v. 9, no. 3, 1964, 412-413

TOPIC TAGS: x ray diffraction, VK 3 ferroelectric ceramic, electric field

ABSTRACT: The results of a study on the effect of a steady electrical field on the diffraction pattern of VK-3 are presented. At room temperature the material is cubic, like perovskite ($a = 4.006 \pm 0.002$ Å), with a Curie point of about 20C. Its properties are markedly nonlinear in a steady electrical field. Each maximum was measured in sequence: first in the electrical field, next with the field removed, then with the field restored, and lastly with the field again removed. No displacement of diffraction maxima was observed, which agrees with the work of Yu. N. Venevtsev, A. G. Kapy*shev, G. S. Zhdanov, and T. N. Verbitskaya (Tezisy* dokladov tret'yego soveshchaniya po segnetoelektrichestvu, 1960, p. 14). However, the intensity of the maxima was observed to diminish sharply in the steady electrical field. This fact was not noted in the work cited. At any particular voltage the

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ACCESSION NR: AP4039401

maximum of 321_{α} decreases more markedly than that of 200_{α}. Results show that the nonlinear properties of VK-3 in steady electrical fields on the order of 3.8-6.6 kg/cm are associated not with changes in symmetry of the lattice but probably with deformation of the electron clouds of the ions, which leads to a diminution in the intensity of individual maxima. Orig. art. has: 2 figures.

ASSOCIATION: Institut neftekhimicheskikh protsessov im. Yu. G. Mamedaliyeva, AN AzerbSSR (Institute of Petroleum-Chemical Processes AN AzerbSSR)

SUBMITTED: 11Aug62 ENCL: 00

SUB CODE: SS, MT, OP NO REF SOV: 003 OTHER: 002

Card 2/2

MAMEDOV, F.A.; ISMAILZADE, I.G.

Spectroscopic study of the conformation of some cyclohexane derivatives. Dokl. AN Azerb. SSR 20 no.2:21-25 '64. (MIRA 17:6)

1. Institut neftekhimicheskikh protsessov im. Yu.G.Mamedaliyeva AN AzerSSR. Predstavleno akademikom AN AzerSSR M.F.Nagiyevym.

MAMEDOV, F.A.; ISMAILZADE, I.G.; MAMEDOV, Shamkhal; NIZKER, I.L.; MAMEDOV, I.M.

Spectroscopic examinations of the effect of the structure of chloroethers of the naphthenic series on their insecticidal qualities. Dokl.AN AzerbSSR 20 no.10:21-26 '64. (MIRA 18:2)

1. Institut neftekhimicheskikh protsessov AN AzerbSSR.

ACCESSION NR: AP4030642 S/0048/64/028/004/0675/0680

AUTHOR: Ismailzade, I.G.

TITLE: X-ray diffraction studies of the high temperature phase transitions in the sodium nibate sodium tantalate system [Report, Symposium on Ferromagnetism and Ferroelectricity held in Leningrad 30 May to 5 June 1963]

SOURCE: AN SSSR. Izv. Ser.fiz., v.28, no.4, 1964, 675-680

TOPIC TAGS: x-ray diffraction, phase transition, sodium niobate solid solution, sodium tantalate solid solution

ABSTRACT: The phase transitions in solid solutions of $NaNbO_3$ and $NaTaO_3$ were investigated by x-ray diffraction. This system was chosen for study because the equality of the radii of Nb^{5+} and Ta^{5+} ions make it particularly interesting. X-ray powder patterns at room temperature showed that true solid solutions were formed at all compositions. Despite the equality of the ion radii, however, the lattice parameters changed discontinuously at compositions of 52.5% and 70% $NaTaO_3$, and the degree of pseudomonoclinicity had a broad minimum at compositions from 50% to 60% $NaTaO_3$. $NaNbO_3$ is antiferroelectric at room temperature and has six phase transitions at

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ACCESSION NR: AP4030642

temperatures from 360 to 638°C. Most of these transitions have been previously reported by others. They involve displacements of the Na^+ and Nb^{5+} ions. $NaTaO_3$ has three phase transitions at 480, 580 and 635°C. These transitions do not involve the Na^+ and Ta^{5+} ions. The solutions undergo phase transitions corresponding exactly to those of the pure materials, but at lower temperatures. The phase transitions of solutions containing less than 52.5% $NaTaO_3$ correspond to those of $NaNbO_3$; those of solutions containing more than 52.5% $NaTaO_3$ correspond to the transitions of $NaTaO_3$. The phase diagram is given, and cubic, pseudocubic, tetragonal, and pseudomonoclinic phases are distinguished. Peaks in the dielectric constant versus temperature curve observed by G.A.Smolenskiy, V.A.Isupov and A.I.Agranovskaya (Zh.tekhn.fiz.27,2528, 1957) for several solutions of this series at temperatures much lower than those investigated in the present study are discussed briefly. What appear to be ferroelectric transitions were observed in solutions containing as much as 75% $NaTaO_3$. If the temperatures of these transitions are extrapolated to pure $NaTaO_3$, a transition temperature below absolute zero is found. It is concluded that $NaTaO_3$ does not become ferroelectric at low temperatures. "I express my deep gratitude to Prof.G.A.Smolenskiy and V.A.Isupov for providing the samples and for their interest in the work."
Orig.art.has: 3 figures and 2 tables.

Card 2/3

ACCESSION NR: AP4030643

ASSOCIATION: Institut neftekhimicheskikh protsessov im.Yu.G.Mamedaliyeva Akademii nauk AzerbSSR (Institute of Petrochemical Processes, Academy of Sciences, AzerbSSR)

SUBMITTED: 00	DATE ACQ: 30Apr64	ENCL: 00
SUB CODE: EM	NR REF SOV: 006	OTHER: 007

Card 3/3

L 33243-65 EWT(m)/EPF(c)/EWP(j) Pc-4/Pr-4 RM

ACCESSION NR: AP5005518 S/0316/64/000/005/0031/0036

AUTHOR: Askerov, A.K.; Kamyshova, T.P.; Sadykhzade, S.I.; Ismailzade, I.G.; Mamedov, I.M.

TITLE: The order of orientation in alkylation reactions of toluene by ethylene and propylene in the presence of aluminum chloride

SOURCE: Azerbaydzhanskiy khimicheskiy zhurnal, no. 5, 1964, 31-36

TOPIC TAGS: toluene alkylation, alkylation reaction, ethylene, propylene, alkyl orientation, olefin addition, alkyltoluene

ABSTRACT: The authors attempted to determine the reasons for the contradictory reports on the isomeric composition of the alkylation products of toluene and to study the effect of temperature, amount of catalyst, molar ratio, the character of the reaction components and the rate of olefin addition on the order of orientation of the alkyl groups on

analysis. It was found that the order of substitution at the benzene ring is not subject to the known rule but depends on the reaction conditions, concentration of the catalyst

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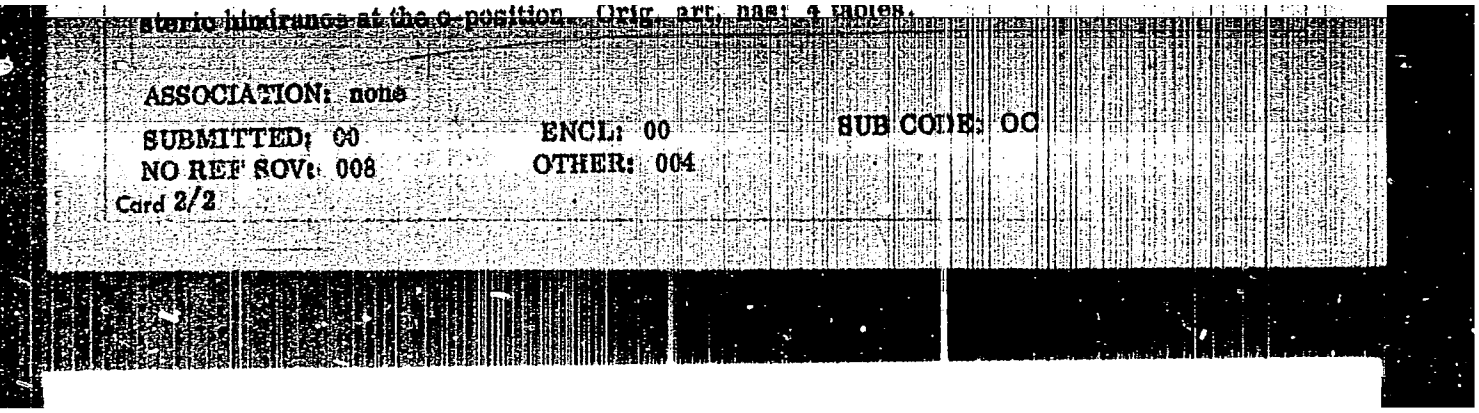
L 33243-65

ACCESSION NR: AP5006518

and the nature of the reaction components. At low temperatures (20-50 C) and low $AlCl_3$ concentrations (2-3% $AlCl_3$ for ethyltoluene), the alkyl groups tended to locate at the o-position; at higher temperatures (80 C) and higher $AlCl_3$ concentrations (10-15%), they added at the p-position. A gradual change from ortho to meta occurred between 50 and



steric hindrance at the o-position. [Orig. art. has: 4 refer.

ASSOCIATION: none

SUBMITTED: 00 ENCL: 00 SUB CODE: OC

NO REF SOV: 008 OTHER: 004

Card 2/2

MEKHTIYEV, S.D.; MAMEDOV, F.A.; ISMAILZADE, I.G.; ALIYEV, A.F.; AGAYEV, U.Kh.

Conformation of molecules of some monochloro-substituted alkylcyclohexanes and their mixtures. Azerb. khim. zhur. no.5:73-79 '64. (MIRA 18:3)

ASKEROV, A.K.; KAMYSHEVA, T.P.; SADYKHZADE, S.I.; ISMAILZADE, I.G.; MAMEDOV, F.A.; MAMEDOV, I.M.

Order of orientation in the reaction of alkylation of xylene isomers with ethylene and propylene in the presence of $AlCl_3$. Azerb. khim. zhur. no.3:44-48 '65. (MIRA 19:1)

1. Institut neftekhimicheskikh protsessov AN AzerSSR.

L 21771-65 EWT(1)/EPA(s)-2/EWT(m)/EEC(t)/T/EWP(t)/EWP(b) Pl-4/Pt-10
IJP(c) GG/JD/JG
ACCESSION NR: AP5003459 S/0181/64/007/001/0298/0301

AUTHORS: Ismailzade, I. G.; Kizhayev, S. A.

TITLE: Determination of the Curie point of ferroelectric $YMnO_3$ and $YbMnO_3$

SOURCE: Fizika tverdogo tela, v. 7, no. 1, 1965, 298-301

TOPIC TAGS: ferroelectricity, paraelectricity, first order phase transition, Curie point, yttrium compound, ytterbium compound

ABSTRACT: To determine the Curie point, the authors investigated the pyroelectric properties of $YMnO_3$ and made high-temperature x-ray diffraction studies of $YMnO_3$ and $YbMnO_3$. A standard procedure was used to measure the pyroelectric current in the [001] direction. The maximum of the pyroelectric current occurred at 660C, where the ferroelectric phase goes over into the paraelectric phase. The x-ray diffraction studies were made by a procedure described previously

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L 24771-65
ACCESSION NR: AP5003459

(Ismailadze, Izv. AN SSSR ser. fiz. v. 24, 1198, 1960 and Kristallografiya v. 7, 363, 1963). The procedure consists essentially of recording the calculated maxima point by point. The results of the x-ray diffraction study also show that a transition from the ferroelectric to the paraelectric phase occurs near 660C, and also that the phase transition is a first-order one. In the case of $YbMnO_3$ the transition temperature is in the interval 700--725C. This is also a first-order phase transition. "The authors thank Professor G. A. Smolenskiy and V. A. Bokov for interest in the work and I. Ye. Myl'nikova for supplying the single crystals. Orig. art. has: 3 figures and 1 table.

ASSOCIATION: Institut poluprovodnikov AN SSSR, Leningrad (Institute of Semiconductors AN SSSR)

SUBMITTED: 04Aug64 ENCL: 00 SUB CODE: SS

NR REF SOV: 003 OTHER: 002

Card 2/2

L 20973-66 EWT(m)/EPF(n)-2/EWP(t) IJP(c) JD/JG
ACCESSION NR: AP5013709 UR/0070/65/010/003/0287/0290
548.736

AUTHOR: Ismailzade, I. G.

TITLE: X-ray examination of phase transition in lithium niobate

SOURCE: Kristallografiya, v. 10, no. 3, 1965, 287-290

TOPIC TAGS: ferroelectricity, crystal structure, phase transition, x ray diffraction

ABSTRACT: Ferroelectric effects in $LiNbO_3$ were studied over a temperature range 20-700°C with an URS-50I X-ray diffractometer. The data shows that the lattice structure remains rhomboidal through the phase transition near 585°C and up to 700°C. Values of the elementary lattice parameters of $LiNbO_3$ at room temperature are given for both rhomboidal and hexagonal structures, and compared with previous work. Temperature dependence of the parameters for the hexagonal lattice is given over the range 200-700°C. The vector of spontaneous polarization is directed parallel to the third-order axis. The presence of a transition near 580°C was confirmed by thermographic analysis using a pyrometer. Near 580°C a small exothermic effect was observed, while below 580°C the effect was endothermic. The discontinuous change in

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L 20973-66

ACCESSION NR: AP5013709

lattice spacing accompanied by the evolution of heat near 585°C indicates a transition of the first kind. [H. D. Megan, Ferroelectricity in Crystals, Methven, London, p 103, 1957]. The data makes Megan's notion that the crystalline structure of $LiNbO_3$ is derived from that of perovskite by ion displacement is doubtful, also denying Kenzig's conclusion that the structure of $LiNbO_3$ at high temperatures is close to that of perovskite and ilmenite. At the ferroelectric phase transition the polar space group C_{3v}^6-R3C evidently goes over to the non-polar D_{3v}^6-R$\bar{3}$c. This agrees with the laws of change for space group symmetry established by Sonin and Zheladiev for ferroelectric phase transitions. "In conclusion I offer my sincere thanks to Professor G. A. Smolensk for useful advice, and to N. N. Krainik for suggesting the substance of the investigations." Orig. art. has: 2 figures, 1 table, 1 formula.

ASSOCIATION: Institut neftekhimicheskikh protsessov im. Akad. Yu. G. Mamedaliyev AN AzerbSSR (Institute of Petrochemical Processes, AN AzerbSSR)

SUBMITTED: 17Jun64 ENCL: 00 SUB CODE: SS, EM

NO REF SOV: 003 OTHER: 006

Card 2/2 MJS

L 4274-66 EWT(m)/EWP(t)/EWP(b) LIP(c) JD

ACC NR: AP5024547 UR/0070/65/010/005/0630/0634

548.736

AUTHOR: Ismailzade, I. G.

TITLE: X-ray diffraction study of the ferroelectric phase transition in lead metatantalate

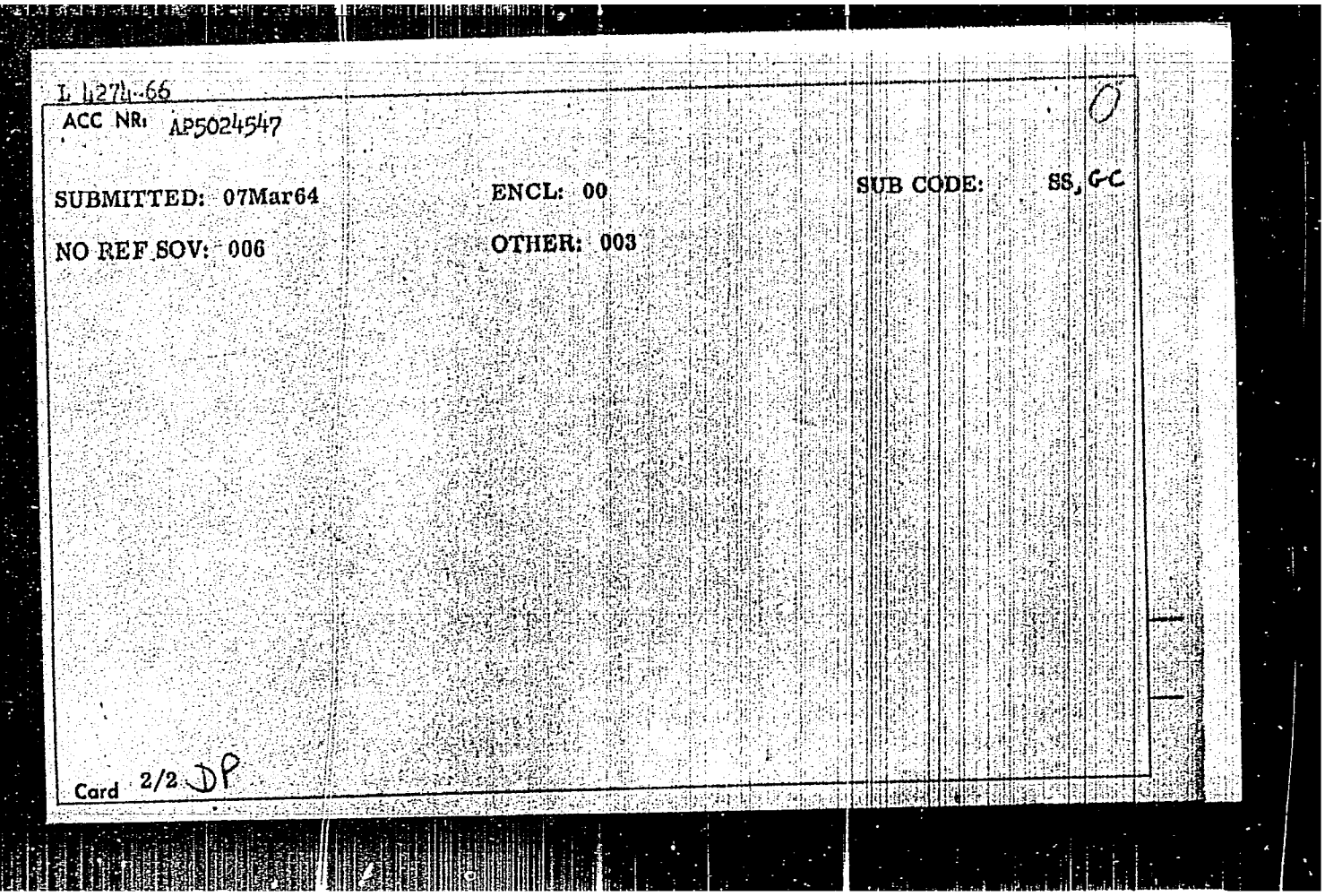
SOURCE: Kristallografiya, v. 10, no. 5, 1965, 630-634

TOPIC TAGS: lead compound, tantalum compound, second order phase transition, paraelectric material, ferroelectric material, crystal lattice parameter

ABSTRACT: The polycrystalline $PbTa_2O_6$ sample was prepared at the Institut poluprovodnikov AN SSSR (Institute of Semiconductors AN SSR). Diffraction patterns of the sample were obtained with a URS-50I x-ray diffractometer in the 20 — 750C range at 15 temperatures. The cell parameters were calculated from the most suitable doublet 280_{α_1} - 820_{α_1} and from the reflection $\{.04_{\alpha_1}$ (λK_{α_1} Fe = 1.93597 A). It was confirmed that the ferroelectric phase transition occurs near 265C. At the Curie point, a rhombic $\rightleftharpoons$ tetragonal change in the cell symmetry takes place. However, results of an optical investigation performed by other authors indicate that in the paraelectric phase the lattice of $PbTa_2O_6$ is also rhombic, although very close to tetragonal. The transition of $PbTa_2O_6$ is a second-order phase transition. "In conclusion, I thank Prof. G. A. Smolenskiy for helpful suggestions and V. A. Isupov for providing the sample." Orig. art. has: 4 figures and 1 table.

ASSOCIATION: Institut neftekhimicheskikh protsessov imeni akad. Yu. G. Mamedaliyeva, AN AzerbSSR (Institute of Petrochemical Processes, AN AzerbSSR)

Card 1/2



L 4274-66
ACC NR: AP5024547 O

SUBMITTED: 07Mar64 ENCL: 00 SUB CODE: SS, GC

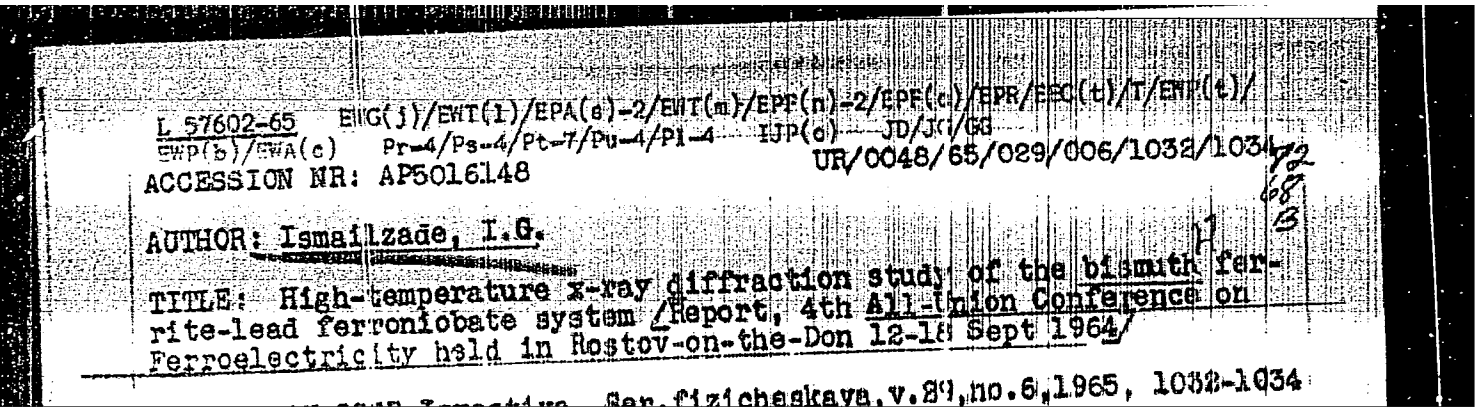
NO REF SOV: 006 OTHER: 003

Card 2/2 DP

PISHNAMAZZADE, B.F.; MAMEDOV, F.A.; GASANOVA, Sh.D.; ISMAILZADE, I.G.; AKOPOVA, D.A.

Synthesis and properties of √-hydroxymethylchlorocyclohexanecarboxylic acid esters. Dokl. AN Azerb. SSR 21 no.2:18-22 '65. (MIRA 18:5)

1. Institut neftekhimicheskikh protsessov AN AzerSSR.



L 57602-65 EWG(j)/EWT(l)/EPA(e)-2/EWT(m)/EPF(n)-2/EPF(c)/EPR/EEC(t)/T/EWP(t)/
EWP(b)/EWA(c) Pr-4/Ps-4/Pt-7/Pu-4/Pl-4 IJP(c) JD/JG/GG
ACCESSION NR: AP5016148 UR/0048/65/029/006/1032/1034 72 68 B

AUTHOR: Ismailzade, I.G.

TITLE: High-temperature x-ray diffraction study of the bismuth ferrite-lead ferroniobate system /Report, 4th All-Union Conference on Ferroelectricity held in Rostov-on-the-Don 12-18 Sept 1964/

Ser.fizicheskaya,v.29,no.6,1965, 1032-1034

rite-lead ferroniobate system [Report] ... 12-14 Sept 1964/ Ferroelectricity held in Rostov-on-the-Don 12-14 Sept 1964

SOURCE: AN SSSR.Izvestiya. Ser.fizicheskaya,v.29,no.6,1965, 1032-1034

TOPIC TAGS: ferroelectricity, crystal structure, phase transition, x-ray diffraction study, bismuth inorganic compound, ferrite, solid solution

ABSTRACT: The x-ray diffraction of solid solutions of $PbFe_{0.5}Nb_{0.5}O_3$ in $BiFeO_3$ containing up to 40 mole percent solute was investigated at temperatures up to 750°C. This system is of interest because of the peculiar electric and magnetic properties of the components. The synthesis of the specimens is described elsewhere (N.N.Kraynik, N.P.Khu-

chua, A.A.Berezhnoy and A.G.Petrov. Electrodes were ... studies. Iron $K\alpha_1$ radiation was used in the x-ray powder diffraction studies.

Card 1/3

L 57602-65
ACCESSION NR: AP6016148

and lattice constants were measured with an accuracy of 0.001 A. Irregularities in the temperature dependences of the $BiFeO_3$ lattice constants were observed at the 375°C Neel point. The lattice constants changed discontinuously at 675°C. G.A.Smolenskiy et al (Zh.eksp.i te-

unit cell was cubic. The Neel point of the solid solution of CrI3

Card 2/3

L 57602-65

ACCESSION NR: AP5016148

composition is near 120°C and the Curie point is near 380°C. "I express my deep gratitude to G.A.Smolenskiy and N.N.Kraynik for providing the specimens for the investigation and discussing the results of the work." Orig.art.has: 3 figures.

press my deep gratitude to G.A.Smolenskiy and N.N.Krylova for providing the specimens for the investigation and discussing the results of the work." Orig.art.has: 3 figures.

ASSOCIATION: Institut neftekhimicheskikh protsessov im.Yu.G.Mamedaliyeva Akademii nauk AzSSR (Institute of Petrochemical Processes, Academy of Sciences of the AzSSR)

SUBMITTED: 00 ENCL: 00 SUB CODE: GS, EM

NR REF SOV: 016 OTHER: 001

Card 3/3

ACC NR: AP6031647 SOURCE CODE: UR/0020/66/170/001/0085/0087

AUTHOR: Ismailzade, I. G.

ORG: Institute of Theoretical Problems of Chemical Technology, Academy of Sciences, AzerbSSR (Institut teoreticheskikh problem khimicheskoy tekhnologii, Akademiya nauk AzerbSSR)

TITLE: X-ray diffraction study of phase transformations in bismuth ferrite

SOURCE: AN SSSR. Doklady, v. 170, no. 1, 1966, 85-87

TOPIC TAGS: bismuth ferrite, bismuth ferrite phase transformation, x ray diffraction study, crystal lattice structure, crystal lattice parameter, FERRITE, BISMUTH COMPOUND, PHASE TRANSITION

ABSTRACT: Sintered $BiFeO_3$ bismuth ferrite has been investigated to determine the Curie points and the nature of changes occurring at temperatures of 20—850C. The obtained temperature dependence of lattice parameters shows that seven phase transformations occur between 20—845C. It was concluded that a superstructure exists in the lattice of bismuth ferrite due to the antiparallel displacement of ions in the lattice. Consequently, bismuth ferrite is antiferroelectric-antiferromagnetic. The temperature of transformation from an antipolarized to a para-electric phase was found to be 875C. Orig. art. has: 1 figure. [TD]

SUB CODE: 11, 20/ SUBM DATE: 03Dec65/ ORIG REF: 013/

Card 1/1 UDC: 548.736